

**LANDES**
BIOSCIENCE**Eurekah.com**[Short Contents](#) | [Full Contents](#)[Other books @ NCBI](#)

Navigation

[About this book](#)[RNA](#)[The End in Sight:](#)[→ Poly\(A\), Translation
and mRNA Stability
in Eukaryotes](#)[Introduction](#)[The Mechanistic
Role of the Poly\(A\)
Tail During
Initiation of
Translation](#)[Structural
Information on the
Building Blocks of
the Bridge between
Cap Structure and
Poly\(A\) Tail](#)[Molecular Concepts
to Explain
Translational
Synergy](#)[Mechanisms of
Translational
Control Involving
the Poly\(A\) Tail](#)[Translation and
mRNA Degradation](#)[Components of the
mRNA Degradation
Machinery](#)[Perspectives](#)[References](#)[Eurekah Bioscience Collection](#) → [RNA](#)

The End in Sight: Poly(A), Translation and mRNA Stability in Eukaryotes

Thomas Preiss

All nuclear-encoded eukaryotic messenger RNAs possess a 5' cap structure (m⁷GpppN) and, with a few exceptions, also possess a 3' poly(A) tail. These modifications are added as part of the mRNA processing pathway during or immediately after transcription in the nucleus. Subsequently, they both influence different aspects of mRNA metabolism including splicing, transport, stability and translation. The cap structure has an important role during the initiation phase of translation as it recruits ribosomes and associated factors to the mRNA. The poly(A) tail can also stimulate translation and cooperates with the cap structure in a synergistic fashion. The eukaryotic initiation factor eIF4G plays a central part as a multifunctional adapter, which brings together various components of the translation apparatus. Through simultaneous interactions with the cap-binding protein eIF4E and the poly(A)-binding protein (PABP), eIF4G is able to bridge the two ends of the mRNA. The resulting pseudo-circular structure of the mRNA is thought to have important functional consequences for the translation process. The importance of the poly(A) tail is further underscored by the fact that the regulated variation of its length on maternal mRNAs is an integral part of gene regulation during oocyte maturation and in early embryonic development. Finally, the majority of cellular mRNAs are degraded by processes that are interconnected with translation and are initiated by poly(A) tail shortening. ↑ [TOP](#)

Search



☒ This book ☐ All
books
☐ PubMed

© 2000-2002 Landes Bioscience.

Search Notes for 09720934

7/29/2004

Dialog (5, 155)

Set	Items	Description
S1	157	EH(W)DOMAIN? OR ESP15?
S2	29039	SRC OR SH3(W)DOMAINS?
S3	13111	RC OR SH3(W)DOMAIN?
S4	30171	SRC OR SH3(W)DOMAIN?
S5	26	S1 AND S4
S6	6	S5 NOT PY=>1998
S7	3	RD (unique items)
S8	8	S5 NOT PY=>1999
S9	4	RD (unique items)